THE USE OF CLASSNETWORK.NET IN TEACHING AND LEARNING

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This study focuses on teaching and learning in higher education. The rapid growth of e-Learning Management Systems [eLMS] made online teaching and learning an increasingly important topic in Information and Communications Technology (ICT) curricula. The present study investigated the use of classnetwork.net by student teachers enrolled in various teacher education programs. The sample consisted of 101 teacher education students who had an opportunity to use classnetwork.net (an online tool for uploading and downloading lecture notes and teaching materials). Classnetwork.net is an alternative mode of knowledge delivery to student teachers, an innovation in Universiti Brunei Darussalam. A survey method was used to elicit answers to the following research questions. How does classnetwork.net help in teaching and learning of teacher education students? How effective is this delivery system in teaching and learning in higher educational institutions? The real strength of eLearning, aside from its ease of use, lies in the set of student and administrative tools it offers. A brief description that was adapted from literature search on the pertinent features of classnetwork.net to further enhance teaching and learning will be outlined. This study will analyze development of online skills (certain aspects) as guided by Cory and Watkins (2004), in line with number of hours of computer usage and frequency of accessing the content in classnetwork.net. Educational innovation for sustainable development will be highlighted in the discussions. An effective communication is judged through correlation between online skills and number of hours and online skills and frequency of access. The study will report on the effective communication among users in line with their capability and willingness to explore the knowledge.

Keywords: teaching and learning, e-learning, classnetwork.net, effective communication

As communications have become central to the learning process, instructors and students in higher education institutions have a bigger role in their core business. E-learning is currently becoming the important trend in education. Tertiary institutions have started to recognize the importance of e-learning in enhancing student learning. E-learning has a profound effect on many aspects of teaching and learning. The advantage of e-learning is that it has many benefits of flexibility. It enables delivery of interactive multimedia learning materials through networks and allows file transfer between the institutions and the students. The learning process has become a learner-centered approach nowadays because of the nature of learning that could take place at the time and location chosen by the learner. Computer technology use has actually helped the students to have more hours in class and more interaction off class because of the opportunities to access learning materials almost everywhere. In order to make technology a significant tool for learning at the university, all teaching staff must recognize the utilization and deployment of technology in their teaching and learning activities. Learning for all students via online facilities can be effectively implemented using encouragement and the correct strategies.

Review of Literature

Online Learning

Sherman and Craig (2003, p. 7) defined virtual world and virtual environment (p. 16) as an imaginary space often manifested through medium, while cyberspace is stated as a location that exists only in the minds of the participants, often as a result of technology that enables geographically distant people to interactively communicate.

Similar to the above context, in teaching and learning, conventionally we are used to delivering content face to face through discussion and so forth. Physically, the communication is real. In virtual learning, learners communicate with the teacher virtually, the content is delivered through the interface designed by the designer (or perhaps by the teacher). Most of the medium used to deliver the content vitually is the World Wide Web. Boettcher and Çonrad (1999) as cited by Pratt and Pallof (2001, p. 67) suggest three types of online courses currently offered:

i. web courses – in which material is placed on a website, allowing students access at any time during given period
ii. web-enhanced course – which use both face-to-face meetings and web delivery and;
iii. web-centric course which are interactive courses conducted exclusively using a course site housed on the web.

The needs of online learning seem to keep on expanding due to demand from instructors and student to keep up to date with course-related content. Ally (2004) stated that educational institutions are moving toward the use of the Internet delivery, both on campus and at a distance.

In the context of Universiti Brunei Darussalam, online learning can easily be applied due to the students' readiness. Ganske and Zahari (2004, p. 90) reported that most educators in English (89.7%) and Malay (62.7%) medium are connected to Internet. The Malay medium used an average of 1.6 hours per day on the computer with 70% of computer time spent on the Internet and English medium used an average of 2.9 hours per day on the computer with 69% of computer time spent on the Internet. Younger educators embrace technologies -- they appear to be more "plugged-in" than the older teachers already in the system. They spend more time on the Internet and engaged in a greater number of Internet activities.

The findings above show that online learning can be one of the highly demanded strategies in delivering content via Internet to students. Classnetwork.net is one of the platforms used by the researcher to deliver content through the Internet. It has been used by lecturers in several areas such as educational technology, sociology of education and culture of thinking. The activities in classnetwork.net only focus on uploading (by the lecturer) and downloading (by the students). WordPress Blog is also used in some courses such as educational technology. Our main intention in using classnetwork.net is to deliver the content effectively to our students – anytime, anywhere. Classnetwork.net is not a dynamic website because it does not include databases and real-time interaction. It is just a medium to enhance the teaching and learning, in other words it can be called a '*web-enhanced course*' (Boettcher & Conrad, 1999).

In any situation, delivering content online needs to consider the learning strategy. Ally (2004b, p. 6) stated that the goal of any instructional system is to promote learning. Therefore, before learning materials are developed, educators must, tacitly or explicitly, know the principles of learning and how students learn. In addition Sallimah (2006, p. 141) stated that teachers who use technology for instruction are characterized by their use of the technology for classroom instruction such as using computer software and ICT for activities that involve higher order thinking. Our main concern in classnetwork.net is how the delivery system works in line with the learning strategy.

Online Learning Strategy

The purpose of delivering content in classnetwork.net is to enhance the teaching and learning activities or at least ensuring the content is available whenever needed by the student. Instead of downloading the content, it is expected that students will prepare early before lectures, read the notes and digest the facts, so that they will be able to critically discuss the topics during the lecture. In other words, the student is expected to gain skills listed by Watkins and Corry (2004) as in Figure 1.

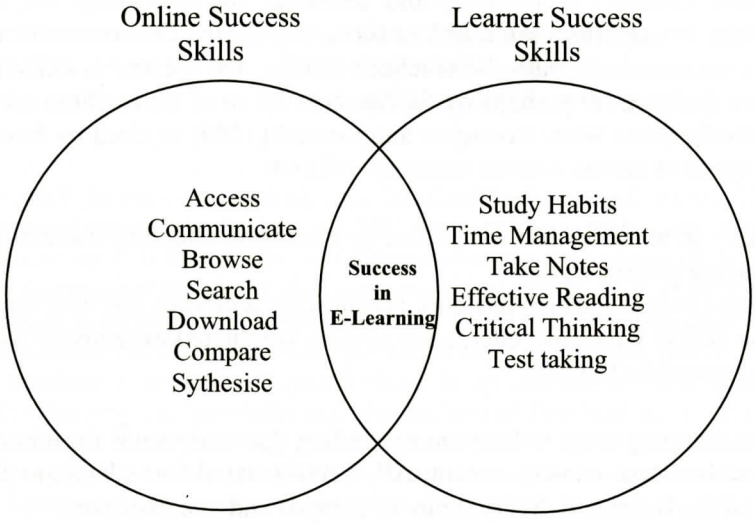

Figure 1. Relating online success with traditional students success skills

Note. From "Preparing E-Learners for Online Success," by Watkins, R., 2005. Learning Circuit, ASTD, available at http://www.learning circuits.org/2005/sep2005/watkins.htm

Other Reviews

Diaz (2000) made a study on the effect of educational treatment (traditional vs. distance learning) on college students. One of the questions asked was what are the characteristics suggestive of student success in an online mode?

Instructors should adapt their teaching method (pedagogy) after knowing the characteristics of students. Diaz says "...current adult learning theory promotes a learner-centered view of education, instructors will need to learn why and how to properly assess student characteristics so they might adapt teaching methods to student learning preferences" (Diaz, 2000, p. 16).

Nussbaum, Hartley, Sinatra, Reynolds, and Bendixen (2002) reported an experiment using note starters (Note starters are a form of scaffolding intended to encourage deep thinking). Participants were 48 undergraduates who wrote on- line discussion notes in response to two issues in educational psychology. Participants also completed a personality survey, based on McCrae and Costa's (1997) five- factor personality model. There was a significant positive main effect of note starters on the frequency of disagreement, as well as personality treatment interactions between note starters and several personality characteristics. The results suggest that note starters are most useful for student with low degrees of curiosity ("Openness to Ideas") or assertiveness, and who are not overly anxious. Note starters appear to encourage students to consider other points of view during on-line discussions.

Rajagopal with Nis Bojin (2003) reported that female students' learning experiences through distance education significantly differed from those of the males; they identified the strengths and weaknesses of the online environment differently. In particular, female adult learners with children and family responsibilities found online courses accessible, convenient, and of great value. Women experienced positive teaching-learning situations through peer interaction. Compared to their male counterparts, slightly more female students (26 percent vs. 16 percent male) seem to identify with the

process of learning, and feel that IT improves their learning. Men, on the other hand, see the outcomes of their learning, and feel that IT has increased their academic productivity (28 percent men and 20 percent women). These differences are small but significant. There seems to be a general consensus among all students about the usefulness of IT in general. However, more among male students (20 percent versus 12 percent female) find that use of IT makes their learning in classes more enjoyable. On the other hand, female students (26 percent versus 17 percent male) seem to emphasize research rather than in-class learning with the help of IT, and report that IT facilitates their academic research.

Norizan (2007) mentioned that at Universiti Kebangsaan Malaysia the use of Learning Care has actually helped the university students to access lecture presentation, lecture notes, access class announcements, submit assignments and to do online quizzes. The students not only attend lectures but are also involved in online forums and communicate with their lecturers after office hours online (2007, p. 137). The technology has helped students in several ways: meaningful hours in class, more interaction off class and flexibility in access. Noor Awanis et al. (2007) explored the traditional and electronic media in term of importance, preference and teaching-learning effectiveness from the perspective of students. This study tests empirically the relationship between Supplementary notes, Internet, LCD Projector, Video Presentation, Overhead Projector, Whiteboard, Intranet and CD-ROM learning effectiveness. The statistical analysis revealed that Supplementary Notes is highly ranked by the respondents while CD-ROM is the least favored. All of the teaching aids were significantly correlated to learning effectiveness.

Purpose of the Study

This study investigates the use of classnetwork.net by student teachers enrolled in various teacher education programs. The aim of the study is to observe and examine the effectiveness of the delivery system classnetwork.net in helping the teaching and learning of teacher education students in Sultan Hassanal Bolkiah Institute of Education. It will also examine whether the students have fulfilled the online success skill criteria by Watkins and Cory (2004) to judge their higher order thinking ability through their exploration of knowledge at their own pace.

Methodology

The sample consisted of 101 teacher education students who had an opportunity to make use of classnetwork.net (an online tool for uploading and downloading lecture notes and teaching materials). Classnetwork.net is an alternative mode of knowledge delivery to student teachers, an innovation in Universiti Brunei Darussalam. The survey method was used to elicit answers to the following research questions:

1. How does classnetwork.net help in teaching and learning in higher educational institutions?
2. How effective is this delivery system in teaching and learning in higher educational institutions?

The students are asked to access classnetwork.net within 14 weeks to download the lecture notes, relevant articles and discussion papers before lectures and tutorials. They are encouraged to read and analyze the materials prior to the lecture and tutorial sessions. No printed materials were given to the students. A questionnaire was given to the students in week 13 for their feedback. The questionnaire was then collected and the data were analyzed using SPSS v. 11.0.

Results

How does Classnetwork.net Help in Teaching and Learning of Teacher Education Students?

Table 1 shows the overall means and standard deviations for Online and Learners Success Skills. In order, means (with standard deviations in parentheses) for online and learner success skills were 2.98 (Information skill), 2.99 (learning skill), 2.84 (Information processing skill), 2.60 (Critical Thinking), 2.70 (Time management), 2.47 (Analyzing skill), 3.35 (Note Taking), 3.61(Communication), 3.96 (Searching information on Internet), 3.94 (Downloading sources from Internet) and 2.35 (Synthesizing) (*SD*s = 0.86, 0.79, 0.78, 0.75, 0.87, 0.81, 0.91, 0.96, 0.98, 1.00 and 1.01 respectively). Three items related to thinking have lower mean compared to the other skills; these were 2.60 (Critical Thinking), 2.70 (Time management), 2.47 (Analyzing skill) and 2.35 (Synthesizing). These findings indicate that users lack skill in critical thinking, analyzing and synthesizing.

Table 1
Distribution of Mean and Standard Deviation for Online and Learner Success Skills

SKILLS	Min	Max	Mean	*SD*
Information skill	2.00	5.00	2.98	.86
Learning skill	1.00	5.00	2.99	.79
Information processing skill	1.00	4.00	2.84	.78
Critical Thinking	1.00	5.00	2.60	.75
Time management	1.00	5.00	2.70	.87
Analyzing skill	1.00	5.00	2.47	.81
Note Taking	1.00	5.00	3.35	.91
Communication	2.00	5.00	3.61	.96
Searching information on Internet	2.00	5.00	3.96	.98
Downloading sources from Internet	2.00	5.00	3.94	1.00
Synthesizing	1.00	5.00	2.35	1.01

Note. Scale
1 – Don't Know 2- Know at least 3 – Know better
4 – Know best 5 - Expert

The findings reveal that most of the users have acquired better learning skill, information processing skill, time management, note taking, communication, information searching and downloading sources from the Internet. This shows that classnetwork.net is able to help students to:

1. minimise their effort in searching irrelevant information related to their course objectives
2. manage their time effectively in order to manage their learning, information and communication skill.
3. obtain the materials anytime, anywhere without hassle for their readiness.

However, the delivery system has to be improved in order to help students in performing their skill in analyzing, synthesizing and critical thinking.

How Effective is This Delivery System in Teaching and Learning in Higher Educational Institutions?

Table 2 shows the number of access to classnetwork.net by students in semester 2, 2007 in 14 weeks. Most of the students access classnetwork.net according to their needs with n=85 (84.2%) and n=11 (10.9%) accessing classnetwork.net according to their needs and once a week respectively; only n=5 (5.0%) students access classnetwork.net twice a week. These findings show that most of the students only access classnetwork.net whenever there is a need. One assumption made is that they only access when there is new material.

Table 2
Access to Classnetwork.net in Semester 2, 2007

Frequency of Access	n	%
Once a week	11	10.9
Twice a week	5	5.0
According to my needs	85	84.2
Total	101	100.0

Table 3 shows the correlations between Online Success Skill and Access Time to Computer at Home and University, the use of computer in teaching and learning and numbers of access to classnetwork.net. The participants indicated their agreement with these item on online success skill using a 5 point Likert scale ranging from 1 (Don't Know) to 5 (Expert) versus three category data numbers of access to computer at home and university. The two items that showed positively strong correlation and are significant with the use of computer at the university are learning skill with r_s = .232, $p < .01$., analyzing skill with with $r_s = .231$, $p < .01$, downloading sources from Internet and synthesis with $r_s = .255$, $p < .01$. The other skill seems to have a strong correlation with no significance. These findings show the importance of numbers of hours access to computer at the university in playing an important role for students to develop more skills in their learning, analyzing, downloading and synthesizing.

The other two items that showed positively strong correlation and are significant with the use of the computer at home are critical thinking and the use of computer at home with $r_s = .213$, $p < .01$. and searching information on Internet with $r_s = .214$, $p < .01$. The other items which had positively strong correlation with no significance are learning skill with with $r_s = .105$, $p < .01$, information processing skill with $r_s = .149$, $p < .01$, downloading sources from Internet with $r_s = .161$, $p < .01$ and synthesizing with $r_s = .167$, $p < .01$. These findings show the importance of numbers of hours access to computer at home do benefit the participants to be more skillful in critical thinking and searching information on the Internet. The effectiveness of the delivery system in teaching and learning in classnetwork.net depends on the attitude of the students. The findings yield two outcomes:

1. This study shows that downloading activities are not sufficient to help students to be more skillful in higher-order thinking activities.
2. However, giving more time and access to content through the website can motivate them to be more skillful in higher-order thinking activities such as analyzing, critical thinking and synthesizing.

Table 3
Spearman Rho Correlations between Online Success Skill and Computer Access Time at Home and University, Computer in Teaching and Learning and Access to classnetwork.net

	How many hours a week do you use a computer at home	How many hours a week do you use a computer at university	Do you like to use computer in teaching and learning?	Numbers of Access to classnetwork in Sem 2, 2007
Information skill	.292(**)	.166	-.078	-.046
Learning skill	.105	.232(*)	-.087	-.131
Information processing skill	.149	.327(**)	-.060	-.061
Critical Thinking	.213(*)	.318(**)	.080	-.051
Time management	-.065	.184	-.030	.009
Analyzing skill	.052	.231(*)	.007	-.049
Note Taking	.086	.053	-.053	-.078
Communication	.078	.142	.040	-.081
Searching information to Internet	.214(*)	.291(**)	.079	-.078
Downloading sources from Internet	.161	.255(*)	.078	-.094
Synthesizing	.167	.225(*)	.024	-.098

* Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed).

Discussion

In using Internet as a medium of instruction, student readiness plays an important role that affects their learning capability. The findings on student readiness on specified skill listed by Watkins (2005) shows that students in Universiti Brunei Darussalam are competent in note taking, communication, searching for information and downloading sources from the Internet, while they also have potential in information skill, learning skill, information processing skill, critical thinking and time management. However the students lack two essential skills that are useful in digesting the content, namely analyzing skill and synthesizing. Watkins (2005) stated that one challenge in assessing e-learning readiness is that most potential e-learners have limited experience with many of the technology and study skills required for success.

Effective professional development strategies are a continuous lifelong learning process. Rajagopal and Bojin (2003) mentioned that the availability of such powerful technology (IT) together with the rapid growth of knowledge means that teaching as a craft can no longer be static; rather, it has to change to meet the needs of a changing world. A rich fusion of teaching, learning and technology is inevitable and will form what has become known as blended learning, a combination of online and face-to-face approaches.

Diaz (2000) attempts to find out what facilitates learning. "Instructors will need to learn why and how to properly assess student characteristics so they might adapt teaching methods to student learning preferences" (Diaz, 2000, p. 16). He was interested in facilitating learning, relating pedagogy to students' characteristics and the learner centered approach in teaching. This is in line with Darling-Hammond's (1999) argument on effective professional development strategies that strengthen teachers' abilities to teach diverse learners with a keen diagnostic eye.

Our study attempts to seek the usefulness of classnetwork.net as an appropriate pedagogy to deliver the content. Suitability of pedagogy to new technology should be an element to consider for teaching at university level. Teaching is a complex process and offers lifelong learning because new things keep cropping up due to changes and development.

Conclusion

Other published works related to our study such as Ferrer (2002, p. 87) reported that all the preservice students in their study agreed that the computer materials they used required learner participation. In relation to our findings, downloaded materials by students are not fully utilized because of lack of competency in analyzing, crtitical thinking and synthesizing skill. Consideration has also to be made to information literacy that focuses on digesting and managing information as supported by Sallimah and Leong (2002, p. 130) who concluded that teachers are likely to move forward Internet-based activities, CD-ROM resources and easy-to-use applications, no matter what their overall framework, and consideration on an 'electronic literacy' framework can signify new approaches to how we use the Internet, Intranet and networks in the classroom and school. The facilities provided in classnetwork.net are focusing only on downloading activities by students, due to their competency in note taking, communication, information searching and downloading Internet sources, and potential in information skill, learning skill, information processing skill, critical thinking and time management. The teacher or instructor needs to redesign the interface from static to more dynamic by increasing the level of interactivity such as online discussion through blog and web quest. The content in classnetwork.net is designed according to course objectives. The content sequencing is structured according to weekly topics. Pedagogically, by considering the lack of analyzing and synthesizing skill among the students, some of the topics that need to be discussed in lectures need to be 'turned' to the interface that is similar to the 'soft-lab' learning application. Since this study only focuses on specific skills in online learning, more studies are required on students' attitude toward online learning and advantages of online discussion according to type of students.

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